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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/567,139	02/06/2006	Jean Michel Martin	023971-0642	8913

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FOLEY AND LARDNER LLP  
SUITE 500  
3000 K STREET NW  
WASHINGTON, DC 20007

EXAMINER
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PILKINGTON, JAMES

ART UNIT	PAPER NUMBER
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3656

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08/03/2010

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/567,139	<b>Applicant(s)</b> MARTIN ET AL.	
	<b>Examiner</b> JAMES PILKINGTON	<b>Art Unit</b> 3656	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 08 July 2010.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-3, 10 and 12-18 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-3, 10 and 12-18 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 06 February 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |                                                                                     |                                                                   |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                    | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)         | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____                                                         | 6) <input type="checkbox"/> Other: _____                          |

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 2, 10 and 12-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pope, USP 6,655,845 in view of Rubin, USP 5,064,547.

Pope discloses a low-friction sliding mechanism wherein:

- the DLC coated sliding member (races in Figures 2H-1, 2H-2 and 2K-1) is formed by coating diamond-like carbon on a base material (polycrystalline diamond, PDC);
- the sliding member (roller in Figure 2K-1) is formed with at least one kind of material selected from a group consisting of a metal material, a non-metal material and a coated material obtained by coating a thin film on a surface of the metal material or the non-metal material (roller is coated with PDC, clm 2)

Pope does not disclose the use of a low-friction agent composition that contains at least one kind selected from a group consisting of an oxygen-containing organic compound (C) and an aliphatic amine compound (D) between the two sliding members, wherein the oxygen-containing organic compound is at least one kind selected from a group consisting of alcohols, esters, ethers, ketones, aldehydes, carbonates and

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derivatives thereof and is contained in the range of 0.05 to 3.0% relative to the total mass amount of low-friction agent composition.

Rubin teaches a low-friction agent composition (lubricant) that contains an oxygen-containing organic compound which is a ester or alcohol (Rubin discloses in column 7, lines 13-26 that esters and alcohols can be used in addition to carboxylic acid) and is contained in a range of 0.05 to 3.0% by mass (weight, column 4 lines 50-59) for the purpose of providing a lubricant with corrosion inhibiting properties (column 5 lines 66-68).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Pope and provide a low-friction agent composition that contains an oxygen-containing organic compound of carboxylic acid in a range of 0.05-3% of the total mass amount of low-friction agent composition, as taught by Rubin, for the purpose of providing a lubricant with corrosion inhibiting properties.

Claims 1, 2, 10 and 12-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pope, USP 6,655,845 in view of Buckley III, UPS 5,108,633.

Pope discloses a low-friction sliding mechanism wherein:

- the DLC coated sliding member (races in Figures 2H-1, 2H-2 and 2K-1) is formed by coating diamond-like carbon on a base material (polycrystalline diamond, PDC);
- the sliding member (roller in Figure 2K-1) is formed with at least one kind of material selected from a group consisting of a metal material, a non-

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metal material and a coated material obtained by coating a thin film on a surface of the metal material or the non-metal material (roller is coated with PDC (clm 2))

Pope does not disclose the use of a low-friction agent composition that contains at least one kind selected from a group consisting of an oxygen-containing organic compound (C) and an aliphatic amine compound (D) between the two sliding members, wherein the aliphatic amine compound has a hydrocarbon group having 6-30 carbon atoms and is contained in the range of 0.05 to 3.0% relative to the total mass amount of low-friction agent composition.

Buckley III teaches a low-friction agent composition (lubricant, column 4 lines 36-47) that contains an aliphatic amine compound (column 12 lines 5-37), wherein the aliphatic amine compound has a hydrocarbon group having 6-30 carbon atoms (C6-C12 disclosed, see column 12 lines 5-37, column 6 lines 14-41 discloses 2-40 carbon atoms and a hydrocarbyl group of 1-10 carbon atoms or column 5 lines 1-12 discloses the hydrocarbyl group with 1-6 carbon atoms) and is contained in a range of 0.05 to 3.0% (weight, column 12 lines 5-37) for the purpose of providing dispersancy and/or detergency to the lubricant (column 4 lines 36-47).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Pope and provide a low-friction agent composition that contains an aliphatic amine compound, wherein the aliphatic amine compound has a hydrocarbon group having 6-30 carbon atoms and is contained in a range of 0.05 to

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3.0% by mass, as taught by Buckley III, for the purpose of providing dispersancy and/or detergency to the lubricant.

Claims 3 and 16-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pope, USP 6,655,845 in view of Rubin, USP 5,064,547 and further in view of Veerasamy, USP 7,067,175.

Regarding claim 3, Pope discloses all of the claimed subject matter as applied to claim 1 above.

Pope does not disclose that the DLC has a hydrogen content of 20 percent or less, in particular an a-C diamond like carbon with no hydrogen.

Veerasamy teaches a DLC which is an a-C diamond like carbon (ta-C) which does not contain hydrogen (column 8 lines 35-36) for the purpose of repelling water and reducing corrosion (column 1 lines 15-21).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Pope and provide for the DLC to have a hydrogen content of 20 percent or less, in particular an a-C diamond like carbon with no hydrogen, as taught by Veerasamy, for the purpose of repelling water and reducing corrosion.

Regarding claims 16-18, Pope discloses a low-friction sliding mechanism wherein:

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- the DLC coated sliding member (races in Figures 2H-1, 2H-2 and 2K-1) is formed by coating diamond-like carbon on a base material (polycrystalline diamond, PDC);
- the sliding member (roller in Figure 2K-1) is formed with at least one kind of material selected from a group consisting of a metal material, a non-metal material and a coated material obtained by coating a thin film on a surface of the metal material or the non-metal material (roller is coated with PDC (clm 2))

Pope does not disclose the use of a low-friction agent composition that contains at least one kind selected from a group consisting of an oxygen-containing organic compound (C) and an aliphatic amine compound (D) between the two sliding members, wherein the oxygen-containing organic compound is at least one kind selected from a group consisting of alcohols, esters, ethers, ketones, aldehydes, carbonates and derivatives thereof and is contained in the range of 0.05 to 3.0% relative to the total mass amount of low-friction agent composition.

Rubin teaches a low-friction agent composition (lubricant) that contains an oxygen-containing organic compound which is a ester or alcohol (Rubin discloses in column 7, lines 13-26 that esters and alcohols can be used in addition to carboxylic acid) and is contained in a range of 0.05 to 3.0% by mass (weight, column 4 lines 50-59) for the purpose of providing a lubricant with corrosion inhibiting properties (column 5 lines 66-68).

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It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Pope and provide a low-friction agent composition that contains an oxygen-containing organic compound of carboxylic acid in a range of 0.05-3% of the total mass amount of low-friction agent composition, as taught by Rubin, for the purpose of providing a lubricant with corrosion inhibiting properties.

Pope does not disclose that the DLC has a hydrogen content of 10 percent or less, in particular an a-C diamond like carbon with no hydrogen.

Veerasamy teaches a DLC which is an a-C diamond like carbon (ta-C) which does not contain hydrogen (C8/L35-36) for the purpose of repelling water and reducing corrosion (C1/L15-21).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Pope and provide for the DLC to have a hydrogen content of 10 percent or less, in particular an a-C diamond like carbon with no hydrogen, as taught by Veerasamy, for the purpose of repelling water and reducing corrosion.

Claims 3 and 16-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pope, USP 6,655,845 in view of Buckley III, UPS 5,108,633 and further in view of Veerasamy, USP 7,067,175.

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Regarding claims 3-6, Pope in view of Buckley III, as applied to claim 1 above, does not disclose that the DLC has a hydrogen content of 20 percent or less, in particular an a-C diamond like carbon with no hydrogen.

Veerasamy teaches a DLC which is an a-C diamond like carbon (ta-C) which does not contain hydrogen (C8/L35-36) for the purpose of repelling water and reducing corrosion (C1/L15-21).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Pope and provide for the DLC to have a hydrogen content of 20 percent or less, in particular an a-C diamond like carbon with no hydrogen, as taught by Veerasamy, for the purpose of repelling water and reducing corrosion.

Regarding claims 16-18, Pope discloses a low-friction sliding mechanism wherein:

- the DLC coated sliding member (races in Figures 2H-1, 2H-2 and 2K-1) is formed by coating diamond-like carbon on a base material (polycrystalline diamond, PDC);
- the sliding member (roller in Figure 2K-1) is formed with at least one kind of material selected from a group consisting of a metal material, a non-metal material and a coated material obtained by coating a thin film on a surface of the metal material or the non-metal material (roller is coated with PDC (clm 2))

Pope does not disclose the use of a low-friction agent composition that contains at least one kind selected from a group consisting of an oxygen-containing organic compound (C) and an aliphatic amine compound (D) between the two sliding members, wherein the aliphatic amine compound has a hydrocarbon group having 6-30 carbon atoms and is contained in the range of 0.05 to 3.0% relative to the total mass amount of low-friction agent composition.

Buckley III teaches a low-friction agent composition (lubricant, column 4 lines 36-47) that contains an aliphatic amine compound (column 12 lines 5-37), wherein the aliphatic amine compound has a hydrocarbon group having 6-30 carbon atoms (C6-C12 disclosed, see column 12 lines 5-37, column 6 lines 14-41 discloses 2-40 carbon atoms and a hydrocarbyl group of 1-10 carbon atoms or column 5 lines 1-12 discloses the hydrocarbyl group with 1-6 carbon atoms) and is contained in a range of 0.05 to 3.0% (weight, column 12 lines 5-37) for the purpose of providing dispersancy and/or detergency to the lubricant (column 4 lines 36-47).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Pope and provide a low-friction agent composition that contains an aliphatic amine compound, wherein the aliphatic amine compound has a hydrocarbon group having 6-30 carbon atoms and is contained in a range of 0.05 to 3.0% by mass, as taught by Buckley III, for the purpose of providing dispersancy and/or detergency to the lubricant.

Pope also does not disclose that the DLC has a hydrogen content of 10 percent or less, in particular an a-C diamond like carbon with no hydrogen.

Veerasamy teaches a DLC which is an a-C diamond like carbon (ta-C) which does not contain hydrogen (C8/L35-36) for the purpose of repelling water and reducing corrosion (C1/L15-21).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Pope and provide for the DLC to have a hydrogen content of 10 percent or less, in particular an a-C diamond like carbon with no hydrogen, as taught by Veerasamy, for the purpose of repelling water and reducing corrosion.

### ***Response to Arguments***

Applicant's arguments filed July 8, 2010 have been fully considered but they are not persuasive.

Applicant argues in points one and three that since the limitation of "carboxylic acid" has been removed from the claim Rubin is no longer a valid teaching.

Rubin does not limit the lubricant from having just carboxylic acid. Rubin discloses in column 7, lines 13-26 that esters and alcohols can be used in addition to carboxylic acid. Since Rubin discloses that esters and alcohols, which are additives recited in the claim, the claimed combination is rendered obvious. The removal of "carboxylic acid" from the claim does not limit the low friction agent from having carboxylic acid present since the claim is not limited to only the additives recited.

Applicant argues in point two that each of the references is missing important aspects of the claimed invention.

One cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). The combination of the references above meets the limitations as set forth in the claims.

The Applicant argues in point four of the Remarks that Buckley III discloses long chain amines having at least 50 carbon atoms which is outside the claimed range of 6-30 carbon atoms.

Buckley III does indeed say that one of the preferred long chain amines has at least 50 carbon atoms, however Buckley III also discloses that the carbon lengths used in lubricating oil can also be between 6 and 12 when employing synthetic oil, see column 12 lines 5-37. Also, column 6 lines 14-41 discloses 2-40 carbon atoms and a hydrocarbyl group of 1-10 carbon atoms and column 5 lines 1-12 discloses a hydrocarbyl group of 1-6 carbon atoms. Applicant's argument appears to be focused on the fact that the total number of carbon atoms disclosed in the claims is limited to less than that recited in Buckley III. However, the claim does not limit the amine to a total of 30 carbon atoms, the claim limits a hydrocarbon group of the amine to 6-30 carbon atoms. The disclosure of Buckley III in column 6 lines 14-41 and column 5 lines 1-12

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covers a hydrocarbon group of 1-10 carbon atoms meeting the limitations set forth in the claim.

### ***Conclusion***

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JAMES PILKINGTON whose telephone number is (571)272-5052. The examiner can normally be reached on Monday - Friday 7-3.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard Ridley can be reached on (571)272-6917. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/JAMES PILKINGTON/  
Examiner, Art Unit 3656  
7/28/10

/Thomas R. Hannon/

Primary Examiner, Art Unit 3656